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RECORD OF ORAL HEARING
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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex Parte ALAIN BOUDOU, LAURENT CASTILLO, and
VAN-TAI NGO

Appeal 2009-013472
Application 10/581,130
Technology Center 2100

Oral Hearing Held: May 6, 2010

14 Before LANCE LEONARD BARRY, ST. JOHN COURTEMAY, III, and
15 JAMES R. HUGHES, *Administrative Patent Judges*.

APPEARANCES.

ON BEHALF OF THE APPELLANT:

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1 MR. DOSSA: Good afternoon. May it please the Court, I represent Alain
2 Boudou, Laurent Castillo, and Van-Tai Ngo. The issue before us is whether
3 or not both determination steps are made during a write process for a flash-
4 type memory. By way of background, flash-type memory is divided first
5 into segments and then subsequently subdivided into partitions. Therefore,
6 and with reference to Figure 1, for example, you may have some flash
7 memory in which you will have multiple sectors, and usually those sectors
8 again will be subdivided into multiple partitions. Processes that access --

9 JUDGE COURTENAY: So you're using the word segment
10 interchangeably with sector in this context?

11 MR. DOSSA: Right. Sorry. Yeah, I meant to refer to a sector.

12 So when we divide the memory into sectors, we then further subdivide
13 them into partitions. Each of these partitions may be individually written to
14 by processes. So from the process perspective, a process may say I would
15 like to write to partition one, two or three. It will then go ahead and attempt
16 to write to them.

17 Now, that results in an interesting issue, which is writing in flash
18 memory or flash-type memory results in the erasure of the entire sector. As
19 a result, when an application or process goes to write to a particular
20 partition, not only is that partition erased within the sector, but the entire
21 sector is erased.

22 So, if we reference Figure 1 in the application, for example, if the
23 application two would like to write in application two's partition, not only
24 would application two partition's be erased, but it might also -- it will also
25 erase application partition one, three, and the OS partition as an artifact of
26 how flash-type memory operates.

1 As you can appreciate, when you don't own -- you being the
2 application running the data -- does not own all the data in the sector, the
3 erasure of other people's data may occur and, as a result, when that occurs,
4 you may be impacting things that you do not intend to impact or, in fact, are
5 not allowed to impact.

6 JUDGE COURTENAY: So these partitions, these multiple partitions
7 shown in sector one of Figure 1, they can belong to different owners?

8 MR. DOSSA: Correct. So and --

9 JUDGE COURTENAY: And if one owner erases one sector or
10 sector 1, he or she erases the entirety of all the partitions in that sector?

11 MR. DOSSA: Correct. So now in order to address this, because that
12 is an undesirable consequence of that operation, the invention does a two-
13 part checking mechanism to prevent this from happening. The first thing it
14 checks is does in fact the process making the request have the ability to
15 make that request, that write request, in the partition it specifies? So, by way
16 of example, if application two wishes to write and it specifies an address in
17 partition two, that test will be satisfied. If it attempts to write an application
18 in partition three, because it is not owned, that application will be denied.

19 Now, even if an application may write to the partition and that test is
20 verified, the question now becomes will my write to that partition that I'm
21 allowed to write to impact other data? And that's the second determination.
22 And as listed in the Claim, what we are asking is making a second
23 determination about whether the owner, i.e., the owner of the data being
24 written --

25 JUDGE BARRY: To which Claim are you referring?

26 MR. DOSSA: Claim 1.

1 JUDGE BARRY: Okay.

2 MR. DOSSA: Making a second determination about whether the
3 owner has permission to erase the entire sector in which the partition is
4 located, using a rule, wherein the rule verifies that the write request does not
5 delete data of an owner, other than the owner issuing the write request.

6 So, basically, what this says is unless I've got -- either I own the data
7 in the entire sector that I'm trying to write my partition to, or I'm allowed to
8 erase the other things, which goes into a dependent claim that's not the focus
9 of this current Appeal, then I am allowed to write. If I do not satisfy that
10 test, that write will fail, and rightly so, because I'm not supposed to be
11 impacting other people's data.

12 Now, the Examiner, in establishing his *prima facie* case, has conceded
13 that the Larsen reference does not disclose the second determination step,
14 and instead has relied on the Appell reference.

15 Now, in the Appell reference, what the Examiner is asserting is that
16 Appell allows you to specify an address to write to, and then a hardware
17 check is performed when that write request is received, and if that address
18 check says that the write request address is within the allowed range that
19 process is allowed to execute in or operate in, then that request proceeds.

20 JUDGE COURTENAY: So would that meet -- would that be
21 sufficient to meet the first determination?

22 MR. DOSSA: That would meet the first determination. There is no
23 impact, and there is no indication that you would understand that the --
24 anything about the other data inside the sector. So merely saying that you
25 could write to a partition, or write to an address space, doesn't tell you

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1 whether or not the rest of the data in that sector may be impacted. There is
2 just no information that's passed through that.

3 And so, we have asserted in our Briefs that, at best, the disclosure in
4 Appell that the Examiner is relying on teaches the first determination but has
5 no bearing or impact on whether or not -- about whether or not the owner
6 which is related to the other data in that sector are impacted.

7 And Appell doesn't even seem to contemplate that issue. It merely
8 focuses on can I write to a given address. And the decoupling of can I write
9 to an address with respect to the overall writing mechanism, which impacts
10 not just the address you're writing to, but the entire sector, we believe is an
11 important distinction and the whole purpose of the invention and what we
12 were trying to solve, and that can be merely asserted as well if you can write
13 to the -- write to an address range, then clearly that results in the ability to
14 not impact other parts of the sector.

15 JUDGE COURTENAY: Okay. Could you address the disclosure at
16 the bottom of Column 9 in the Appell reference?

17 MR. DOSSA: Oh, sure. If you would bear with me a moment.

18 JUDGE COURTENAY: If you could just more clearly distinguish
19 your claim over this disclosure?

20 MR. DOSSA: In Column 9 or Column --

21 JUDGE COURTENAY: I'm looking at Column 9, starting around
22 line 49.

23 MR. DOSSA: If you would just bear with me a moment.

24 JUDGE BARRY: So, under the header Segmentation, what's --
25 Judge Courtenay, the second sentence, beginning with the second sentence?
26

1 JUDGE COURTENAY: Right. We have a disclosure of a segmented
2 address scheme that has a segment number and a relative address and --

3 MR. DOSSA: Correct.

4 JUDGE COURTENAY: The hardware checks that the address used
5 by a process is part of the address space assigned to the process, if the
6 address is outside -- if the address is outside the prescribed address space, an
7 exception occurs. A process cannot refer to data within the address space of
8 another process because the hardware uses the segment tables of the
9 referencing process. Thus, there is no possibility for a process or a process
10 group to reference an entity belonging to another process group.

11 MR. DOSSA: So it --

12 JUDGE COURTENAY: So --

13 MR. DOSSA: Oh, sorry.

14 JUDGE COURTENAY: -- that at least teaches the first
15 determination.

16 MR. DOSSA: Agreed. I believe that the -- the reason that does not
17 teach a second determination is all that is saying is can I write to a given
18 location, and it doesn't take into account that if I say yes to that check, does
19 that impact other parts of the sector? And, in fact, I would go further to say
20 that in -- it is -- in general memory management, even in our invention, we
21 are not asserting that you have a right to access data outside your partition.
22 The issue is whether or not that you make that request to write to a partition
23 that doesn't impact data that you have no business looking at or impacting at
24 all. And so, the distinction we would make is, at best, this segmentation will
25 address step one, you can write to the partition, but will not allow you to
26 extend that to say does that write request impact other pieces, even if you're

1 not being able to access those, the write mechanism inherently impacts them,
2 and so you must check whether or not it will impact it. Whether or not you
3 can access it is sort of a separate issue.

4 JUDGE COURTENAY: Okay. And the same column, the bottom of
5 Column 9, the reference goes on to disclose that there are instances where
6 you have overlap in these address spaces and you have segments that are
7 shared by all processes that are public segments. And we have a disclosure
8 that the system programs check to ensure against address conflicts, and also
9 that segments shared by several processes are not protected from misuse by
10 one of these processors. And then they introduce a ring protection method
11 that addresses that problem.

12 So can you distinguish, better distinguish your second determination
13 over this disclosure, where we have a shared address space in the context of
14 a public segment?

15 MR. DOSSA: So I think it's important to keep in mind that as -- a
16 claim sets its scope as to flash-type memory. And so, in the contemplation
17 of this type of addressing scheme, they're trying to prevent access to given
18 locations.

19 Now, it is clear that if you have access to a shared piece of memory
20 that, you know, we grant you to access to, then our position would be you do
21 have the right to -- you know, within our context of our invention, you
22 would have the right to erase that because it's not others' data necessarily, it
23 is -- it counts also as your data. And that's how it would fall within our
24 position. And so, when I -- when we claim that we check to see whether or
25 not we're allowed to erase others' data, in shared memory, we would take the
26 position that because it's shared that's also our data, and so if we have

1 permissions to access it, we also have permissions to overwrite it, in the
2 context of our invention.

3 I do think that Appell, as a whole, is related to an earlier generation of
4 memory protection devices. It wasn't contemplating the ability to have --
5 addressing at one level of granularity and writing at a larger level of
6 granularity. And so, the issues that you're dealing with, with shared memory
7 and such, are slightly different in the context of flash memory versus
8 traditional memory, where it wouldn't matter if I could write to a -- if I could
9 write to a partition, and I could erase on a partition basis, and not impact the
10 sector, then we -- I think this would be a different issue. But because we
11 write on a smaller level, or we can write to a smaller level but it impacts the
12 larger granularity, you end up having that distinction that this type of
13 technology doesn't address.

14 JUDGE COURTENAY: So your argument is -- your second
15 determination is this really -- it involves a rule that has a finer level of
16 granularity, to use your own words, as opposed to what's disclosed in the
17 reference at the bottom of Column 1?

18 MR. DOSSA: Right. And so we are really looking at whether or not,
19 because we know the write operation requires a sector-wide erase, that we
20 are looking at that level of granularity, are we going to impact data that we
21 have no business really overwriting, is ultimately what the issue is. Which
22 here, I would assert that we have access to the data. And here, they talk
23 about, in the Appell reference, that you are allowed to interact with the data,
24 and you're given a level, the write levels of privilege, that you're also able to
25 manipulate that data, and as such, overriding how it would for us fall under
26 that manipulation ability.

1 JUDGE COURTENAY: Okay. Any further questions?

2 JUDGE BARRY: No questions, no.

3 JUDGE COURTENAY: Anything else you would like to discuss
4 regarding this case?

5 MR. DOSSA: No. I think that is all we have today.

6 JUDGE COURTENAY: All right. Thank you, counsel.

7 We are off the record.

8 Whereupon, the proceedings, at 1:11 p.m., were concluded.

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